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10/655,564

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EXAMINER

FINDLEY, CHRISTOPHER G

ART UNIT

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2621

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05/02/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--|--|--|
| Office Action Summary | Application No. 10/655,564 | Applicant(s) DUMITRAS ET AL. | |
| | Examiner CHRISTOPHER FINDLEY | Art Unit 2621 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 February 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 2/01/2008 have been fully considered but they are not persuasive.
2. Re claims 1, 7, and 13, the Applicant contends that neither Chang nor Osberger, alone or in combination, teach or suggest the claimed process of determining percentages of each frame covered by the at least two largest regions; determining a statistical measure of the motion angles for at least one of the two largest regions; and comparing the percentages and statistical measure to threshold values to identify at least one of a pan and a zoom in the video sequence. However, the Examiner respectfully disagrees. As previously stated in the prior office action, Chang discloses that a moving object and the background constitute at least two regions, which are determined by their respective motion vector orientations (Chang: page 11, lines 10-15). Osberger discloses that the motion vectors for texturally flat areas (areas with small difference values) are set to zero (Osberger: column 7, lines 30-35). Furthermore, the histogram disclosed by Osberger is a measure of the amount of motion in the scene (Osberger: column 7, lines 61-64). As such, one of ordinary skill in the art at the time of the invention would have found it obvious that the histogram for a scene with a global motion characteristic (i.e., pan or zoom) would contain a moving background, which would not be texturally flat, and therefore produce a histogram with much higher motion activity than a scene with a non-moving, texturally flat background because a global motion scene would have both of the two largest regions moving as opposed to just one

Art Unit: 2621

of the two largest regions for the still scene, thereby creating a histogram with a much higher motion percentile for the global motion scene than the motion percentile for the still scene.

3. Applicant's further arguments are based on the alleged deficiency discussed above, and consequently are not persuasive. Therefore, the Examiner maintains the previous rejection of claims 1-18. A copy of the detailed action is included below.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al. (PCT/US97/08266) in view of Osberger (US 6670963 B2).

Re **claim 1**, Chang discloses a method of detecting at least one of a pan and a zoom in a video sequence, comprising: selecting a set of frames from a video sequence (In order to perform the analysis outlined in Chang it is inherent that a set of video frames are selected from a video sequence); determining a set of motion vectors for each frame in the set of frames (Chang: page 15, lines 10-12, each motion vector associated with the B and P frames contained in the shot are decoded); determining a motion angle for each motion vector (Chang: page 16, lines 3-6, the motion vectors of an object are represented in a 2-dimensional (x, y) plane, wherein it is inherent that

each vector consists of a magnitude and direction, and the direction may be represented by an angle expressed as a geometric function of the x and y components); identifying at least two largest regions in each frame having motion vectors with substantially similar motion angles (Chang: page 11, lines 10-15, The moving object(s) and the background constitute at least two regions, which are determined by their respective motion vector orientations; page 16, lines 3-4, each extracted object may be expressed by a global motion vector, indicating that the object is composed of several blocks with substantially similar motion angles/direction). Chang does not explicitly disclose determining percentages of each frame covered by the at least two largest regions; determining a statistical measure of the motion angles for at least one of the two largest regions; and comparing the percentages and statistical measure to threshold values to identify at least one of a pan and a zoom in the video sequence. However, Osberger discloses a visual attention model, wherein motion vectors are calculated and used to determine pan, tilt, zoom, and rotate (Osberger: column 7, lines 23-28), and an estimate of the amount of motion in a scene is obtained by taking the mth percentile of the camera motion compensated motion vector map (Osberger: column 7, lines 61-64). Since both Chang and Osberger relate to determining pan and zoom in a video sequence, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the statistical motion analysis of Osberger with the indexing and editing methods of Chang in order to provide an improved visual attention model of the type having spatial features to generate a spatial importance map and having a temporal importance map combined with the spatial importance map to

produce an overall importance map for a frame (Osberger: column 8, lines 58-67), which would provide a more comprehensive technique for indexing video with key content browsing (Chang: page 6, lines 2-6). The combined method of Chang and Osberger has all of the features of claim 1.

Re **claim 2**, the combined method of Chang and Osberger discloses that the step of selecting a set of video frames from a video sequence further comprises: identifying a scene cut between two frames in the video sequence (Chang: Fig. 1, "SCENE CUT DETECTION" in PARSING section 110); and responsive to the identification of a scene cut, selecting a set of video frames from the video sequence that includes all the frames in the video sequence up to and including a frame just before the scene cut (Chang: column 2, lines 5-8).

Re **claim 3**, the combined method of Chang and Osberger discloses that frame differences and motion information are used to identify a scene cut (Chang: column 4, lines 45-61).

Re **claim 4**, the combined method of Chang and Osberger discloses that the motion angles are computed in one from the group of coordinate systems consisting of polar, Cartesian, spherical and cylindrical coordinate systems (Chang: Fig. 4 is a vector diagram, which serves to explain global and local motion. The x and y coordinates are contained in a Cartesian coordinate system and used in Equation (1) on page 14. Line 17 of page 14 states, "(x,y) is the coordinate of a macroblock in the current frame.>").

Re **claim 5**, the combined method of Chang and Osberger discloses that the percentages of each frame covered by the at least two largest regions are determined

from the number of pixels in each region as a percentage of the total number of pixels in a frame (Osberger: column 7, line 64, through column 8, line 9, pixel spacing and screen size are factored into the calculations).

Re **claim 6**, the combined method of Chang and Osberger discloses that the statistical measure is a variance (Osberger: column 3, lines 50-55, variance is used in the calculations).

Claim 7 recites the corresponding system for implementing the method of claim 1, and, therefore, has been analyzed and rejected with respect to claim 1 above.

Claim 8 has been analyzed and rejected with respect to claim 2 above.

Claim 9 has been analyzed and rejected with respect to claim 3 above.

Claim 10 has been analyzed and rejected with respect to claim 4 above.

Claim 11 has been analyzed and rejected with respect to claim 5 above.

Claim 12 has been analyzed and rejected with respect to claim 6 above.

Claim 13 recites the corresponding computer readable medium stored thereon a computer program for executing the method of claim 1, and, therefore, has been analyzed and rejected with respect to claim 1 above.

Claim 14 has been analyzed and rejected with respect to claim 2 above.

Claim 15 has been analyzed and rejected with respect to claim 3 above.

Re **claim 16**, the combined method of Chang and Osberger discloses a majority of the features of claim 16, as discussed above regarding claims 1 and 13, but does not specifically disclose the use of polar coordinates in the motion vector analysis.

However, the combined method of Chang and Osberger does use Cartesian

coordinates (see fig. 4). The Examiner takes Official Notice that one of ordinary skill in the art would have found it obvious to convert the Cartesian motion vector representation to polar coordinates as a personal preference for visual and/or mathematical representation. Polar coordinates provide no advantage over Cartesian coordinates and are simply a different way of representing the same data.

Claim 17 has been analyzed and rejected with respect to claim 5 above.

Claim 18 has been analyzed and rejected with respect to claim 6 above.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTOPHER FINDLEY whose telephone number is (571)270-1199. The examiner can normally be reached on Monday-Friday 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha D. Banks-Harold can be reached on (571) 272-7905. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Christopher Findley/

/Marsha D. Banks-Harold/

Supervisory Patent Examiner, Art Unit 2621

Application/Control Number: 10/655,564
Art Unit: 2621

Page 9